(19) World Intellectual Property Organization International Bureau





(43) International Publication Date 7 February 2002 (07.02.2002)

PCT

(10) International Publication Number WO 02/009591 A3

(51) International Patent Classification7:

A61B 17/00

(21) International Application Number: PCT/US01/24462

(22) International Filing Date: 2 August 2001 (02.08.2001)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 60/222,525

2 August 2000 (02.08.2000) US

- (71) Applicant: LOMA LINDA UNIVERSITY MEDICAL CENTER [US/US]; 11176 Campus Street, Suite A1116, Loma Linda, CA 92350 (US).
- (72) Inventors: ZHU, Yong, Hua; 30913 Sutherland Drive, Redlands, CA 92373 (US). KIRSCH, Wolff, M.; 1360 Prospect Drive, Redlands, CA 92373 (US).
- (74) Agent: ALTMAN, Daniel, E.; Knobbe, Martens, Olson & Bear, LLP, 620 Newport Center Drive, Sixteenth Floor, Newport Beach, CA 92660 (US).

- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ (utility model), DE (utility model), DK (utility model), DM, DZ, EC, EE (utility model), ES, FI (utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK (utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

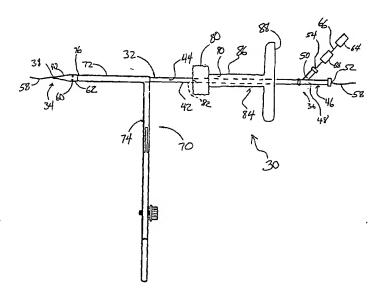
Published:

with international search report

(88) Date of publication of the international search report: 1 August 2002

[Continued on next page]

(54) Title: METHOD AND APPARATUS FOR CLOSING VASCULAR PUNCTURE



(57) Abstract: A method and apparatus for closing a vascular wound includes a guidewire (58) and/or other surgical implement (32) extending from the wound (w). A sponge-like hemostatic material (80) is advanced over the surgical implement and into contact with an area of the blood vessel (94) surrounding the wound. The surgical implement (32) is removed. Blood (b) soaks the hemostatic material (80), and blood clotting is facilitated by the hemostatic agent within the material. A sealing layer of adhesive (106) can be applied to the sponge-like material (80), confining the blood flow to the sponge. Thus, the vascular puncture wound (w) is sealed by natural blood clot formation.



02/000501 A3



For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

Intern: I Application No PCT/US 01/24462

		PCT/US 01/24462		
A. CLASSII IPC 7	FICATION OF SUBJECT MATTER A61B17/00			
According to	International Patent Classification (IPC) or to both national classification and IPC			
	SEARCHED			
Minimum do IPC 7	cumentation searched (classification system followed by classification symbols) $A61B \\$			
Documentat	ion searched other than minimum documentation to the extent that such documents are	included in the fields searched		
Electronic d	ata base consulted during the international search (name of data base and, where prac-	tical, search terms used)		
EPO-In	ternal, WPI Data			
C. DOCUM	ENTS CONSIDERED TO BE RELEVANT			
Category °	Citation of document, with Indication, where appropriate, of the relevant passages	Relevant to claim No.		
χ	EP 0 818 178 A (CARDIOLOGICS, L.L.C.) 14 January 1998 (1998-01-14) the whole document	1,2,4-9		
Y A	site miore document	3 20		
Υ .	WO 98 24374 A (LOMA LINDA UNIVERSITY MEDICAL CENTER) 11 June 1998 (1998-06-11) figures	3		
X	US 6 056 768 A (CATES ET AL.) 2 May 2000 (2000-05-02)	1,2,4-9, 13,15-18		
Α	the whole document	20		
	-/			
X Furt	her documents are listed in the continuation of box C. X Patent fa	amily members are listed in annex.		
"A" docum consi	ent defining the general state of the art which is not cited to unde dered to be of particular relevance creation	nt published after the International filing date te and not in conflict with the application but instand the principle or theory underlying the		
filing of the document of the	cannot be co annot which may throw doubts on priority claim(s) or is cited to establish the publication date of another in or other special reason (as specified) ent reterring to an oral disclosure, use, exhibition or means means cannot be co	particular relevance; the claimed invention insidered novel or cannot be considered to ventive step when the document is taken alone particular relevance; the claimed invention insidered to involve an inventive step when the combined with one or more other such docu- combination being obvious to a person skilled		
later t	han the priority date claimed "8" document me	mber of the same patent family		
		ng of the international search report 2/2002		
		Authorized officer		
	NL - 2280 HV Rijswijk	nez Burgos, R		

INTERNATIONAL SEARCH REPORT

Interior al Application No PCT/US 01/24462

C.(Continu	ation) DOCUMENTS CONSIDERED TO BE RELEVANT	sages Relevant to claim No.		
Category °				
X	WO OO 33744 A (UNIVIVERSITY OF VIRGINIA PATENT FOUNDATION) 15 June 2000 (2000-06-15) abstract; figures	1,2,4-9, 19		
A	page 17, line 11 -page 20, line 6	20		
x	US 5 486 195 A (MYERS ET AL.) 23 January 1996 (1996-01-23) column 5, line 55-65; figures 5A-5D	1,2,4-9		

INTERNATIONAL SEARCH REPORT

Inter' al Application No
-PCT/US 01/24462

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
EP 0818178	A	14-01-1998	US	5728133 A	17-03-1998
			DE	69703863 D1	15-02-2001
			DE	69703863 T2	09-08-2001
			ΕP	0818178 A2	14-01-1998
			ES	2155654 T3	16-05-2001
			JР	10043311 A	17-02-1998
			US	5928266 A	27-07-1999
WO 9824374	Α	11-06-1998	US	6004341 A	21-12-1999
			ΑU	7621998 A	29-06-1998
			EΡ	0874591 A1	04-11-1998
			EP	0955900 A1	17-11-1999
			MO	9720505 A1	12-06-1997
			MO	9824374 A1	11-06-1998
			US	6287322 B1	11-09-2001
			US	2001053922 A1	20-12-2001
US 6056768	A	02-05-2000	US	6162240 A	19-12-2000
WO 0033744	A	15-06-2000	AU	. 2045200 A	26-06-2000
			WO	0033744 A1	15-06-2000
US 5486195	Α	23-01-1996	US	5725551 A	10-03-1998